Conventional Light Frame Construction Design Provisions

The following are excerpts of the provisions of the 1997 Uniform Building Code Section 2320. These apply to one-story additions to single family homes only that meet the other requirements for Residential Express Plan Check.

Braced Wall Lines: Buildings shall be provided with exterior and interior braced wall lines. Spacing shall not exceed 25 feet (7620 mm) on center in both the longitudinal and transverse directions on each story.

EXCEPTION: In one- and two-story Group R. Division 3 buildings, interior braced wall line spacing may be increased to not more than 34 feet (10 363mm) on center in order to accommodate one single room per dwelling unit not exceeding 900 square feet (83.61m^2). The building official may require additional walls to contain braced panels when this exception is used.

Interior braced wall support: In one-story buildings, interior braced wall lines shall be supported on continuous foundations at intervals not exceeding 50 feet (15 240 mm). In buildings more than one story in height, all interior braced wall panels shall be supported on continuous foundations.

Girders: Girders for single-story construction or girders supporting loads from a single floor shall not be less than 4 inches by 6 inches (102 mm by 153 mm) for spans 6 feet (1829 mm) or less, provided that girders are spaced not more than 8 feet (2438 mm) on center. Other girders shall be designed to support the applicable loads. Girder end joints shall occur over supports. When a girder is spliced over a support, an adequate tie shall be provided. The end of beams or girders supported on masonry or concrete shall not have less than 3 inches (76 mm) of bearing.

Supporting bearing partitions: Bearing partitions perpendicular to joists shall not be offset from supporting girders, walls or partitions more than the joist depth.

Joists under and parallel to bearing partitions shall be doubled.

Braced Wall Panels: Braced wall lines shall consist of braced wall panels that are in line or offset from each other by not more than 4 feet (1219 mm). Braced wall panels shall start not more than 8 feet from each end of a braced wall line and shall be spaced not more than every 25 feet center to center. All braced wall panels shall be clearly indicated on the plans.

Braced wall panel sole plates shall be nailed to the floor framing and top plates shall be connected to the framing above. Sills shall be bolted to the foundation or slab. Where joists are perpendicular to braced wall lines above, blocking shall be provided under and in line with the braced wall panels.

Construction of braced wall panels shall be by one of the following methods:

Wood boards of 5/8-inch (16 mm) net minimum thickness applied diagonally on studs spaced not over 24 inches (610 mm) on center.

Wood structural panel sheathing with a thickness not less than 5/16 inch (7.9mm) for 16-inch (406 mm) stud spacing and not less than 3/8 inch (9.5 mm) fir 24-inch (610 mm) stud spacing in accordance with Tables 23-II-A-1 and 23-IV-D-1.

Fiberboard sheathing 4-foot by 8-foot (1219mm by 2438 mm) panels not less than ½ inch (13 mm) thick applied vertically on studs spaced not over 16 inches (406mm) on center when installed in accordance with Section 2315.6 and Table 23-II-J.

Particleboard wall sheathing panels where installed in accordance with Table 23-IV-D-2.

Portland cement plaster on studs spaced 16 inches (406 mm) on center installed in accordance with Table 25-I.

Hardboard panel siding when installed in accordance with Section 2310.6 and Table 23-II-C.

Each braced panel must be at least 48 inches (1219 mm) in length, covering three stud spaces where studs are spaces 16 inches (406mm) apart and covering two stud spaces where studs are spaced 24 inches (610 mm) apart.

Alternate Braced Wall Panels: Any required braced wall panel may be replaced by an alternate braced wall panel constructed in accordance with the following:

1. In one-story buildings, each panel shall have a length not less than 2 feet 8 inches (813 mm) and a height of not more than 10 feet (3048 mm).
2. Each panel shall be sheathed on one face with 3/8-inch-minimum-thickness (9.5 mm) plywood sheathing nailed with 8d common or galvanized box nails in accordance with Table 23-II-B-1 and blocked at all plywood edges.
3. Two anchor bolts installed in accordance with Section 1806.6 shall be provided in each panel. Anchor bolts shall be placed at panel quarter points. Each panel end stud shall have a tie-down device fastened to the foundation, capable of providing and approved uplift capacity of not less than 1,800 points (816.5 kg). The tie-down device shall be installed in accordance with the manufacturer's recommendations.
4. The panels shall be supported directly on a foundation or on floor framing supported directly on a foundation, which is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom.
5. In the first story of two story buildings, each alternate braced wall panel shall have plywood sheathing applied to both faces of the panel, shall use 3 anchor bolts and tie-downs with an uplift capacity of not less than 3000 pounds. The foundation must have at least one #4 rebar at the top and bottom.

Unusually shaped buildings: When of unusual shape, buildings of light-frame construction shall have a lateral-force-resisting system designed to resist the forces specified in Chapter 16. Buildings shall be considered to be of unusual shape when the building official determines that the structure has framing irregularities, offsets, split levels or any configuration that creates discontinuities in the seismic load path and may include one or more of the following:

When an opening in a floor or roof exceeds the lesser of 12 feet (3657 mm) or 50 percent of the least floor or roof dimensions.

Construction where portions of a floor level are vertically offset such that the framing members on either side of the offset cannot be lapped or tied together in an approved manner as required by Section 2320.8.3.

EXCEPTION: Framing supported directly by foundations.

When braced wall lines do not occur in two perpendicular directions.

Additional information can be obtained by visiting our website at www.sanjoseca.com/building/ or by calling at (408) 535-3555 and leaving a detailed message. In addition you may visit the Building Division in City Hall at 200 East Santa Clara St, San Jose CA 95113-1905